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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,437	06/25/2003	Leping Huang	883.0007.U1(US)	6335

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EXAMINER	
NG, CHRISTINE Y	
ART UNIT	**PAPER NUMBER**
2663	

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,437	HUANG, LEPING	
	Examiner	Art Unit	
	Christine Ng	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 23-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4,5,14,15 and 18* is/are allowed.

6)☒ Claim(s) *1-3,6,7,9-13,16,17,19-21,23-25 and 27* is/are rejected.

7)☒ Claim(s) *8,26 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 11-13, 21 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,084,858 to Matthews et al.

Referring to claim 1, Matthews et al disclose in Figure 2A a method for routing data packets in a network, comprising:

Estimating a link bandwidth (used_bandwidth(e)) of at least one network node (source A). Refer to Column 8, line 65 to Column 9, line 8.

Calculating (Step 16) a connectivity metric ($Z_p(i)$) based on the estimated link bandwidth (used_bandwidth(e)). Refer to Column 4, lines 44-48 and Column 8, line 65 to Column 9, line 8.

Distributing (using a traversal value vector) information concerning the calculated connectivity metric ($Z_p(i)$), using a routing protocol packet (traversal value vector). "Each element of the vector corresponds to a current value for one of the metrics" and "each time a destination node is discovered, a traversal value vector is updated for each node" (Column 6, lines 6-16). The traversal value vector is a "routing protocol packet" in that its metrics are updated as it traverses through a path from a source to a

destination, so that the metrics can be used to determine the best path. Refer to Column 6, lines 35-39 and Column 7, lines 12-18.

Using the calculated connectivity metric ($Z_p(i)$), determining (Step 18) a route having a maximum link bandwidth and a minimum traffic load. After all paths are evaluated by the traversal value vectors, "the path which best fits the desired result for presentation is selected". Refer to Column 4, lines 50-54 and Column 7, lines 12-18 and 28-64.

Matthew et al do not disclose that the method is used in a wireless network. However, wireless networks require better and more reliable services due to the scarce bandwidth and high bit error rates in the air interface. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the method is used in a wireless network, the motivation being in order to facilitate routing in a wireless network by finding the most efficient route for data transmissions.

Referring to claims 2 and 12, Matthews et al do not specifically disclose that the estimating uses a model of a network medium access control MAC algorithm.

However, Matthews et al disclose that each packet has a source MAC address and a destination MAC address to designate the route of the packet. If a packet has multiple different paths, the best path is determined by factors such as bandwidth. Furthermore, the path of the packet is needed in order for the system to estimate the bandwidth required to route the packet to its destination. Refer to Column 1, lines 27-30 and Column 1, line 66 to Column 2, line 21. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the

estimating uses a model of a network medium access control MAC algorithm, the motivation being that the MAC addresses specify the source and destination of the packet, so that the system can determine a path and estimate the bandwidth needed to route the packet.

Referring to claims 3 and 13, refer to the rejection of claims 2 and 12. Matthews et al also do not specifically disclose that the model is a model of a Bluetooth network medium access control MAC algorithm.

However, Bluetooth is a common protocol that can be used to interconnect mobile phones, computers and other devices using a short-range wireless connection. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that the model is a Bluetooth network MAC algorithm, the motivation being that the Bluetooth allows several devices in a small area to be wirelessly connected.

Referring to claim 11, Matthews et al disclose in Figure 3 a computer program embodied on a computer readable medium (memory 192) and comprising computer program code segments for use by at least one data processor (CPU 191) when implementing a routing protocol in a network. Refer to Column 10, lines 7-18. Furthermore, Matthews et al disclose sending information concerning a calculated connectivity metric (Zp(i)) to at least one other network node using a routing protocol packet (traversal value vector). "The node reports to the model what the metric values are for the node and the arcs that originate from it". Refer to Column 6, lines 6-16. Refer also to the rejection of claim 1.

Matthews et al do not specifically disclose a first computer program code, a second computer program code, a third computer program code and a further computer code to perform the steps defined in claim 1.

However, Matthews et al disclose that the memory 192 "contains a computer program or data structure for providing to a general purpose computer instructions and data for carrying out the methods". Refer to Column 10, lines 14-18. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a first computer program code, a second computer program code and a third computer program code to perform the steps defined in claim 1, the motivation being that each step of the process requires a separate set of computer instructions.

Matthews et al also do not disclose that the computer program is used in a wireless network. Refer to the rejection of claim 1.

Referring to claim 21, Matthews et al disclose receiving information concerning a calculated connectivity metric ($Z_p(i)$) from at least one other network node. "As each node is discovered, a traversal value vector is recorded for that node", with the traversal vector including the current value for one of the metrics of the previous nodes in the discovered path. Refer to Column 6, lines 6-16.

Referring to claim 23, refer to the rejection of claim 1 and claim 11.

Referring to claim 24, refer to the rejection of claims 2 and 12.

Referring to claim 25, refer to the rejection of claims 3 and 13.

3. The indicated allowability of claim 6 [*presently combined with claim 1*], claim 7, claim 16 [*presently combined with claim 11*] and claim 17 is withdrawn in view of the

newly discovered reference(s) to U.S. Publication No. 2003/0119538 to Momosaki et al. Rejections based on the newly cited reference(s) follow.

4. Claims 6, 7, 16, 17 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,084,858 to Matthews et al in view of U.S. Publication No. 2003/0119538 to Momosaki et al.

Referring to claims 6 and 16, refer to the rejection of claim 1 and claim 11.

Furthermore, Matthews et al do not disclose that estimating includes considering a node's status and the number of the node's slaves.

Momosaki et al disclose estimating the amount of bandwidth needed in a system by determining the node's status (master or slave) and the number of the node's slaves. The total bandwidth is divided equally amongst the master and all the slaves. If the bandwidth required by each node increases, some slaves may have to be disconnected to order to accommodate the bandwidth requirement changes. Also, since the bandwidth is shared equally amongst all nodes, the number of slaves cannot increase, so the number of the node's slaves must be known to ensure that it does not go over the bandwidth threshold. Refer to Paragraphs 0075-0076. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that estimating includes considering a node's status and the number of the node's slaves; the motivation being to ensure that the total amount of bandwidth required by all the nodes does not exceed the total amount of bandwidth provided to the system, which must be shared equally amongst all nodes.

Referring to claims 7 and 17, Matthews et al do not disclose that considering a node's status considers whether a node is a Master node, a Slave node, or a Participant in Multiple Piconet (PMP) node.

Momosaki et al disclose considering whether a node is a master node or a slave node. The upstream device becomes a master and the downstream devices becomes slaves. Refer to Paragraphs 0075-0076. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include that considering a node's status considers whether a node is a Master node, a Slave node, or a Participant in Multiple Piconet (PMP) node; the motivation being to determine the network topology and to determine the number of slaves and bandwidth required in the network, since the total bandwidth cannot exceed the network bandwidth.

Referring to claim 27, refer to the rejection of claim 1, claim 6 and claim 7.

5. The indicated allowability of claim 9 [*presently combined with claim 1*] and claim 19 [*presently combined with claim 11*] is withdrawn in view of the newly discovered reference(s) to U.S. Publication No. 2003/0043746 to Hiroyuki et al. Rejections based on the newly cited reference(s) follow.

6. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,084,858 to Matthews et al in view of U.S. Publication No. 2003/0043746 to Hiroyuki et al.

Refer to the rejection of claim 1 and claim 11.

Furthermore, Matthews et al do not disclose inserting the value of the

connectivity metric (bandwidth) into a routing protocol packet in place of the value of a hop number.

Hiroyuki et al disclose that finding an optimum path between nodes in a network comprises using a metric to compare paths. The metric can be the number of hops or the bandwidth, the goal of which is to minimize the metric in choosing a path. Refer to Paragraph 0006 and 0051. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include inserting the value of the connectivity metric (bandwidth) into a routing protocol packet in place of the value of a hop number; the motivation being that bandwidth can also be used as a metric to determine the optimum path. By minimizing the bandwidth of one path, more bandwidth is available for other transmissions in the network.

7. The indicated allowability of claim 10 [*presently combined with claim 1*] and claim 20 is withdrawn in view of the newly discovered reference(s) to U.S. Patent No. 5,878,029 to Hasegawa et al. Rejections based on the newly cited reference(s) follow.

8. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,084,858 to Matthews et al in view of U.S. Patent No. 5,878,029 to Hasegawa et al.

Refer to the rejection of claim 1 and claim 11.

Furthermore, Matthews et al do not disclose inserting the value of the connectivity metric (bandwidth) into a routing protocol packet in conjunction with the value of a hop number.

Hasegawa et al disclose in Figure 28 that a source switch 20 comprises a route information collector 22 to collect and record information on routes to the destination switch 30; the route information including the hop number, the current utilized bandwidth and the residual bandwidth. The information is collected by sending out RM cells (Figure 3) to transmit switches, which loads the route information into the data field of the RM cells. Refer to Column 19, line 39 to Column 20, line 27. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include inserting the value of the connectivity metric (bandwidth) into a routing protocol packet in conjunction with the value of a hop number; the motivation being that a combination of both hop number and bandwidth allows the system to choose the most optimum and efficient path. By minimizing the number of hops, the transmission will be faster and require less processing at intermediate nodes. By minimizing the bandwidth of one path, more bandwidth is available for other transmissions in the network.

Allowable Subject Matter

9. Claims 4, 5, 14, 15 and 18 are allowed.

10. Claims 8, 26 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Ng whose telephone number is (571) 272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C. Ng CN
June 21, 2005

RICKY NGO
PRIMARY EXAMINER
6/23/05